

IN THE CLAIMS

Claims 1-33 (cancelled)

Claim 34 (new): A device for surveying the pressure of fluids housed in tanks or flowing through ducts, characterised by the fact that it comprises the following elements:

a connecting body having an axial symmetry;

connecting means connectable to ends of tubes coming from containers or pipes to send a fluid to the body;

an external envelope, with axial symmetry, housing the connecting body, the external envelope sliding on the connecting body from a first distal position to a second position proximal with respect to the body according when an external force (F) acts on the envelope;

self-closing means capable of sealing an entrance room located between the connecting means and a measuring chamber:

a manoeuvre member, integral with a rigid member, and mechanically connected to the external envelope; the manoeuvre member allows that the self-closing means open the entrance room, when the external envelope is sliding from the first distal position to the second proximal position;

the manoeuvre member allows the closing of the self-closing means when the external envelope is in the distal position and the relative pressure of the fluid in the measure chamber is lower than a first a first pre-established threshold value (P_{ci});

the rigid member forms a sensor with a relative pressure threshold, since the manoeuvre member, integral with the rigid member, remains in the proximal position when the action of the force (F) stops only if the relative pressure of the fluid is higher or the same than a pre-established threshold value; on the contrary, the manoeuvre member moves towards the distal position if the relative pressure of the fluid is lower than

said pre-established threshold value;
signalling means are provided to signal the distal or proximal position of the rigid member to the external environment;
the measuring chamber contains the fluid of the container or pipe coming through passages, from the entrance room when opened by the manoeuvre member; at least the pressure force of the fluid acts in the measuring chamber; the manoeuvre member closes the connection among the measuring chamber, the ends and the external environment;
a deforming element sensitive to the forces acting in the measuring chamber, said deforming element being capable of moving the manoeuvre member together with a rigid member which guides the deforming element;
a space connected to the external environment and housing a spring, the space is found in a position opposite to the measuring chamber so that the spring acts on the deforming element contrasting at least the pressure force in the measuring chamber on the deforming element; therefore, when the manoeuvre member is in a position proximal with respect to a support and the relative pressure in the measuring chamber is lower than the first pre-established threshold (P_{ci}), the force of the spring exceeds the contrasting forces acting on the deforming element, and the element moves the manoeuvre member towards a distal position, allowing that the self-closing means seals the entrance room;
passages are further provided, connecting the measuring chamber to the environment when the self-closing means close the entrance room.

Claim 35 (new): The device as in claim 34, wherein a spring is housed in the measuring chamber;

said spring is located between the end of the body and a supporting basis, integral with the external envelope;
in this way, the spring can move said external envelope

towards a first position distal with respect to the end; in the distal position a limit stop of the external envelope is in contact with the body.

Claim 36 (new): The device as in claim 34, wherein the measuring chamber is delimited by a first movable diaphragm, a rigid member, the body, the external envelope and a second movable diaphragm.

Claim 37 (new): The device as in claim 34, wherein measure mechanisms are further provided,

said measure mechanisms acting according to the equilibrium of the forces of the relative pressure in the measuring chamber and of elastic elements contrasting said forces of the relative pressure; the forces of the elastic elements are prefixed by means of the contact with rigid supports, in order to obtain elastic reactions easy determinable and repetitive in the time.

Claim 38 (new): The device as in claim 34, wherein a rigid support consists of a basis fixed by a wall, integral with the external envelope.

Claim 39 (new): The device as in claim 34, wherein the entrance room, which feeds a valve with three ways and two positions, and the space, connected to the external environment, are always separated;

the entrance room is connected to a cavity located at the extremity of the end, while the space communicates with the external environment.

Claim 40 (new): The device as in claim 34, wherein the valve with three ways and two positions comprises a self-closing diaphragm held by a seat, located between a first support and the body.

Claim 41 (new): The device as in claim 34, wherein the valve with three ways and two positions further consists of the self-closing diaphragm;

said closing diaphragm having a surface sealing the entrance room when said surface is in contact with an edge of a head, disposed at the extremity of a pin integral with the body; the pin crosses a hole located in the self-closing diaphragm.

Claim 42 (new): The device as in claim 34, wherein the manoeuvre member acts on the valve with three ways and two positions for commuting from the closing condition to the opening condition,

in closing condition the entrance room is separated from the measuring chamber and the measuring chamber communicates with the environment, while, in the opening condition the entrance room communicates with the measuring chamber, and the measuring chamber is separated from the external environment.

Claim 43 (new): The device as in claim 34, wherein other sensors are further provided,

said other sensors commuting from first to second conditions of equilibrium to emit signals depending on the instantaneous value of the relative pressure of the fluid to be surveyed; the sensors being capable of sensing thresholds (P_{adv} , P_{ci} , P_{cs}) of different valued of the relative pressure of the fluid founding in the measuring chamber.

Claim 44 (new): The device as in claim 34, wherein said other sensors are sensitive of the force of the relative pressure in the measuring chamber transmitted to the sensors through the second movable diaphragm.

Claim 45 (new): The device as in claim 43, wherein said other sensors consist of sliders resting on the second movable diaphragm, of elastic members, of contacts supported by the sliders, and of

contacts fixed to the basis;

if the value of the relative pressure in the measuring chamber exceeds a threshold value (P_{adv} , P_{ci} , P_{cs}), the contacts supported by the sliders touch the contacts fixed to the basis for defining a first electric condition; vice-versa, if the value of the relative pressure in the measuring chamber is lower than the threshold value (P_{adv} , P_{ci} , P_{cs}), the contacts supported by the sliders are detached from the contacts fixed to the basis for defining a second electric condition.

Claim 46 (new): The device as in claim 45, wherein said electric conditions are transmitted to the basis fitted with electric circuits and apparatuses processing the electric conditions of the contacts and to obtain signals to be transmitted to the external environment.

Claim 47 (new): The device as in claim 43, wherein said other sensor are housed in a cavity joined to the environment for reference the value of the pressure in the measuring chamber to the value of the external environment.

Claim 48 (new): The device as in claim 34, wherein the manoeuvre member consists of a hollow rod, integral with the rigid member, the hollow rod opens the self-closing diaphragm to commute the valve with three ways and two positions from a first condition, defined by the disjunction of the hollow rod from the self-closing diaphragm, to a second condition in which the contact between the edge of the hollow rod and the surface of the self-closing diaphragm seals the communication between the cavity of the hollow rod and the space.

Claim 49 (new): The device as in claim 34, wherein the commutation of the valve with three ways and two positions in the second condition occurs when the hollow rod, in contact with the surface

of the diaphragm, acts on the diaphragm with a push sufficient to move the surface towards the entrance room communicating with the cavity.

Claim 50 (new): The device as in claim 34, wherein the rigid member is fitted with internal ducts to connect the entrance room to the measuring chamber through the cavity, when the forces acting in the measuring chamber exceed the spring.

Claim 51 (new): The device as in claim 34, wherein an interspace is provided,

said interspace being obtained by increasing the radial dimensions of the external envelope to keep the advantage consisting in the shortening of the total length of the device and to maintain the counter spring, disposed between the body and the supporting basis, integral with the external envelope.

Claim 52 (new): The device as in claim 34, wherein a first Belleville washer is further provided,

said washer acting on the rigid member, contrasting the action of at least the force of the pressure in the measuring chamber on said rigid member, and on the first movable diaphragm.

Claim 53 (new): The device as in claim 34, wherein a second Belleville washer is also provided, said second washer acting on the first slider.

Claim 54 (new): The device as in claim 34, wherein the connecting body is separated in two portions,

a first portion is fixed for fastening the device on the end, and

a second portion is movable to axially translate both with respect to the fixed portion and with respect to the external envelope.

Claim 55 (new): The device as in claim 34, wherein a flange is realised at the end of a protuberance, integral with the movable portion of the body;

a gasket being located between the flange and an end, integral with the fixed portion of the body; the gasket sealing the flange and the end.

Claim 56 (new): The device as in claim 34, wherein the body houses a cavity, in which the protuberance axially translates.

Claim 57 (new): The device as in claim 34, wherein a hollow sleeve is integral with the movable portion of the body;

the internal wall of the hollow sleeve axially sliding with respect to a peripheral wall of the fixed portion.

Claim 58 (new): The device as in claim 34, wherein the internal wall is coupled to the peripheral wall with a sufficient accuracy, therefore the hollow sleeve forms a guide for the movable portion.

Claim 59 (new): The device as in claim 54, wherein the counter spring is housed in an interspace out the hollow sleeve;

the space is permanently connected to the external environment through the duct, obtained in the first support, the duct located in the movable portion, the camera, the duct obtained in the fixed portion, the duct obtained in the movable portion, the interspace radially obtained in the movable portion to house the counter spring, the duct obtained in the fixed portion and the duct obtained in the external envelope.

Claim 60 (new): The device as in claim 45, wherein the second slider is integral with the third slider for forming a sole fourth slider, free to axially move between a distal position and a position proximal with respect to the basis.

Claim 61 (new): The device as in claim 45, wherein the fourth slider is in the first position distal with respect to the basis, the distal position being the position of equilibrium reached by the fourth slider when the environmental pressure acts in the measuring chamber;

the first distal position of the fourth slider is reached because of the reaction of the first elastic member contrasting with the strength to the deformation offered by the second movable diaphragm;

the second spring keeps the first slider pressed against the second movable diaphragm in the first position distal with respect to a second support.

Claim 62 (new): The device as in claim 45, wherein the first elastic member, located between the fourth slider and the basis, keeps the fourth slider pressed against the second movable diaphragm.

Claim 63 (new): The device as in claim 45, wherein the second elastic member is located between the fourth slider and the contact.

Claim 64 (new): The device as in claim 45, wherein a fourth slider comprises the joined second and third sliders;

the first elastic member is found between the fourth slider and the wall, connected to the first slider; the reaction of the first elastic member discharges on the first slider, and the fourth slider is free to axially move between a distal position and a position proximal with respect to the basis.

Claim 65 (new): The device as in claim 34, wherein a plate is further provided,

the plate being disposed between the rigid member and the

first Belleville washer;

the plate being free to axially translate with respect to the rigid member between a distal position and a position proximal with respect al first support.

Claim 66 (new): The device as in claim 34, wherein the rigid member and the plate are separated to uncouple the actions regarding the seal of the gasket for separating the chamber from the chamber.